

WHAT IS CLAIMED IS:

1. A curved ultrasonic surgical blade, wherein said curved ultrasonic blade comprises:

a concave top surface including a central ridge;

a convex bottom surface wherein said convex bottom surface has a width greater than twice the width of said central ridge; and

first and second side walls connecting said convex bottom surface to said central ridge, said first and second side walls forming a portion of said concave top surface.

2. A curved ultrasonic surgical blade according to Claim 1 wherein said ultrasonic surgical blade has a substantially trapezoidal cross-section.

3. A curved ultrasonic surgical blade according to Claim 2 wherein said convex bottom surface is substantially parallel to an upper surface of said central ridge.

4. A curved ultrasonic surgical blade according to Claim 2 wherein said first side wall intersects said convex bottom surface to form a sharp blade edge.

5. A curved ultrasonic surgical blade according to Claim 2 wherein said first side wall intersects said convex bottom surface to form a blunt blade edge.

6. A curved ultrasonic surgical blade according to Claim 5 wherein said blunt blade edge is square.

7. A curved ultrasonic surgical blade according to Claim 2 wherein said convex bottom surface has a width greater than three times the width of said central ridge.

8. A curved ultrasonic surgical blade according to Claim 7 wherein said first and said second side walls intersect to form a sharp blade edge.

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9. A curved ultrasonic surgical blade according to Claim 7 wherein said first and said second side walls intersect to form a blunt blade edge.

10. A curved ultrasonic surgical blade according to Claim 9 wherein said blunt blade edge is square.

11. A balanced ultrasonic surgical instrument including a curved ultrasonic surgical blade, wherein said ultrasonic surgical instrument comprises:

an ultrasonic transmission rod having a proximal end and a distal end;
a balance region including first and second balance asymmetries wherein said balance region extends from a node point at said distal end of said ultrasonic transmission rod to a proximal end of said curved ultrasonic surgical blade, wherein said curved ultrasonic surgical blade comprises:
a distal end;
a proximal end connected to said balance region;
a concave top surface including a central ridge;
a convex bottom surface wherein said convex bottom surface has a width greater than twice the width of said central ridge; and
first and second side walls connecting said convex bottom surface to said central ridge, wherein said first and second side walls form a portion of said concave top surface such that said curved ultrasonic surgical blade has a substantially trapezoidal cross-section.

12. A balanced ultrasonic surgical instrument according to Claim 11, wherein said first and second balance asymmetries are positioned to counter torque created in said proximal end of said blade by said curved ultrasonic surgical blade.

13. A balanced ultrasonic surgical instrument according to Claim 12, wherein said first and second balance asymmetries are positioned such that transverse vibrations in said ultrasonic transmission rod are substantially equal to zero.

14. A balanced ultrasonic surgical instrument according to Claim 12 wherein the balance ratio of the transmission waveguide is less than 1:10.

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16. A balanced ultrasonic surgical instrument according to Claim 11 wherein
5 said first and said second side walls intersect to form a sharp blade edge.

10 18. A balanced ultrasonic surgical instrument according to Claim 17 wherein
said blunt blade edge is square.

19. A balanced ultrasonic surgical instrument according to Claim 11 wherein said curved blade and said balance region are bisected by a plane of symmetry, said curved blade being substantially symmetrical on either side of said plane of symmetry, said first balance asymmetry comprising a flat surface in said balance region wherein said first flat surface is substantially perpendicular to said plane of symmetry and said second balance asymmetry comprises a second flat surface in said balance region opposite said first flat surface wherein said second flat surface is substantially perpendicular to said second plane of symmetry.

20. A balanced ultrasonic surgical instrument according to Claim 19 wherein said first balance asymmetry is shorter than said second balance asymmetry.